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The cost of convenience foods
A salute to the canning industry
Homemakers discuss food containers

AGRICULTURAL MARKETING SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

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Homemakers Appraise Containers for Canned and Frozen Foods



by DANIEL B. LEVINE

A MERICAN housewives are pretty well satisfied with the sizes and types of containers in which canned and frozen food products are being sold.

According to a recent three-city survey conducted by the Marketing Research Division of AMS, most women like both cans and cartons. They point out the convenience of cans, the ease with which they can be stored, and the fact that canned goods "last indefinitely." They like frozen food containers because they're "easy to open" and "don't take up a lot of space in the trash."

There are, however, a few things the women don't like about each type of container. Some women, for instance, complain that cans are "hard to open," that frozen food cartons don't always come in enough variety of sizes.

These comments—both pro and con—came from some 1,300 homemakers in Atlanta, Ga., Kansas City, Mo., and San Francisco, Calif., who were given a chance to sound off about what they did and did not like

about the packages used for canned and frozen food products.

Interviewers first asked the housewife if she preferred cans or frozen food cartons, then if she were satisfied with the sizes offered, and if the information on the labels were adequate.

The choice of whether to buy food in cans or cartons varied with the housewife and with the product. In all three cities, fruits were preferred canned—by 2 or 3 to 1. So were juices, meats, and soups.

But for vegetables the story was different. San Francisco housewives preferred frozen vegetables almost 3 to 1, while in Atlanta and Kansas City the preferences were divided almost equally between frozen and canned.

On the question of quality, some 4 in 10 of the homemakers felt that frozen foods provide superior quality because the "freshness is preserved by the freezing process." An additional 2 in 10 felt the canned product provided better quality; 3 in 10 were unable to distinguish any difference.

Once the selection was made between frozen and canned foods, the brand name provided the most important key to buying. Other infor-

mation on the label was almost totally ignored. Most women didn't know, or apparently care, how much the can held in actual ounces or even in the number of servings listed on the label.

Yet, almost 9 out of 10 women found the array of existing can sizes adequate for their needs. From past experience, they were able to select the right size to serve their families. Usually, the No. 2 can, holding from 4 to 5 servings, was their choice.

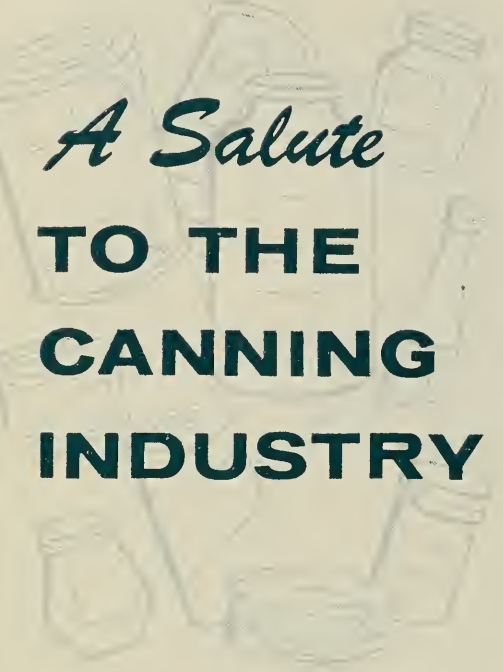
Although 6 out of 10 housewives said the size of the frozen food containers was about right, some complained that "there wasn't enough variety in the sizes offered." A few said the packages were "too small."

The women who bought frozen food, however, paid more attention to the cooking instructions and suggested recipes on the label. They also consulted the label to find out how to defrost and handle the food.

Nonetheless, only about 25 percent looked beyond the brand name.

When the interviewer asked the housewife if she would prefer only the brand name on the label, most women objected. Nearly 6 out of 10 felt the maximum amount of information should be included.

The author is a staff member of the Marketing Research Division of AMS.



A Salute **TO THE CANNING INDUSTRY**

by S. R. SMITH

AMERICA'S canning industry is being saluted, during the month of September, for the vitally important function it performs in marketing agricultural products.

All segments of the food marketing business are combining in a celebration of September as "Canned Foods Month." It is one of those occasions when the spotlight is put on an important industry serving agriculture, and due tribute is paid for the day-in, day-out, around-the-clock contributions that the industry makes to building a better life for Americans.

The U. S. Department of Agriculture is taking a leading part in this celebration. A feature of its participation is an exhibit in the patio of the USDA Administration Building in Washington.

A patio full of displays acknowledges the importance of the canning industry in expanding the farmer's markets and in bringing to the consumer the diverse products of farm, field, and orchard.

The entire exhibit is being assembled and displayed in cooperation with the Nation's canning industry.

One of the exhibits traces the

The author is Director of the Fruit and Vegetable Division, AMS.

course of canned foods from field to table, showing how the canning industry serves all America by linking farmer to consumer. The farm-to-market route is covered in several stages.

One stage of the exhibit shows how, by helping to lengthen the consuming season and by expanding his outlets, the canning industry broadens the farmer's marketing opportunities.

A typical canning-crop farmer and his tractor stand out forcefully against background murals showing production of foods for canning.

Another stage of the exhibit illustrates how these foods are canned for the consumer. This phase shows how USDA's inspection services aid the canning industry in marketing quality food products. Photomurals show actual scenes of Department inspectors at work in the many ways they do this job.

A final stage of this exhibit shows Americans eating their meals—in the home, in food service establishments, in school lunches. In all of them, the exhibit emphasizes, the great variety of canned foods helps Americans to eat better, more economically.

Another display features a map of the United States, with the States—and Alaska—represented in proportion to their contribution to the Nation's canned food supply. Color photographs of growing and harvesting scenes illustrate how the skills of modern agriculture are used in producing foods for canning.

Still another exhibit emphasizes the tremendous variety of canned foods available to the consumer. All of the Nation's food canners are co-operating in this exhibit by providing samples of the products they pack. Actual samples are presented, row on row, in a mass display.

When the exhibit was being planned, the total number of different items canned was thought to be slightly in excess of 1,000. But, the number of individual products actually received for display in the exhibit totaled over 3,000.

The mass display provides colorful, powerful testimony to the wealth of good eating that canners provide to America's consumers.

While the "Salute to Canning" exhibit is being shown in the patio, a film entitled "The Three Squares" will be shown continuously in the patio theater. This movie tells the story of canning and what it has meant to consumers.

This patio exhibit will be the scene of a ceremony, on September 2nd, to inaugurate September as "Canned Foods Month." Secretary Benson and other USDA officials are scheduled to join with leaders of the canning industry, at this ceremony, in launching the month-long celebration.

This exhibit and the ceremony will be only one of the many events which have been planned across the country to dramatize the occasion.

Retail food stores also will observe "Canned Foods Month," using colorful point-of-sale materials to attract shoppers' attention to the event and to canned foods. All the many phases of the food service industry will join in, reminding their patrons how canned foods help to make better meals for those who "eat out," regularly or on occasion.

Newspapers, magazines, television, and radio are all planning to feature the story of canned foods during the September salute.

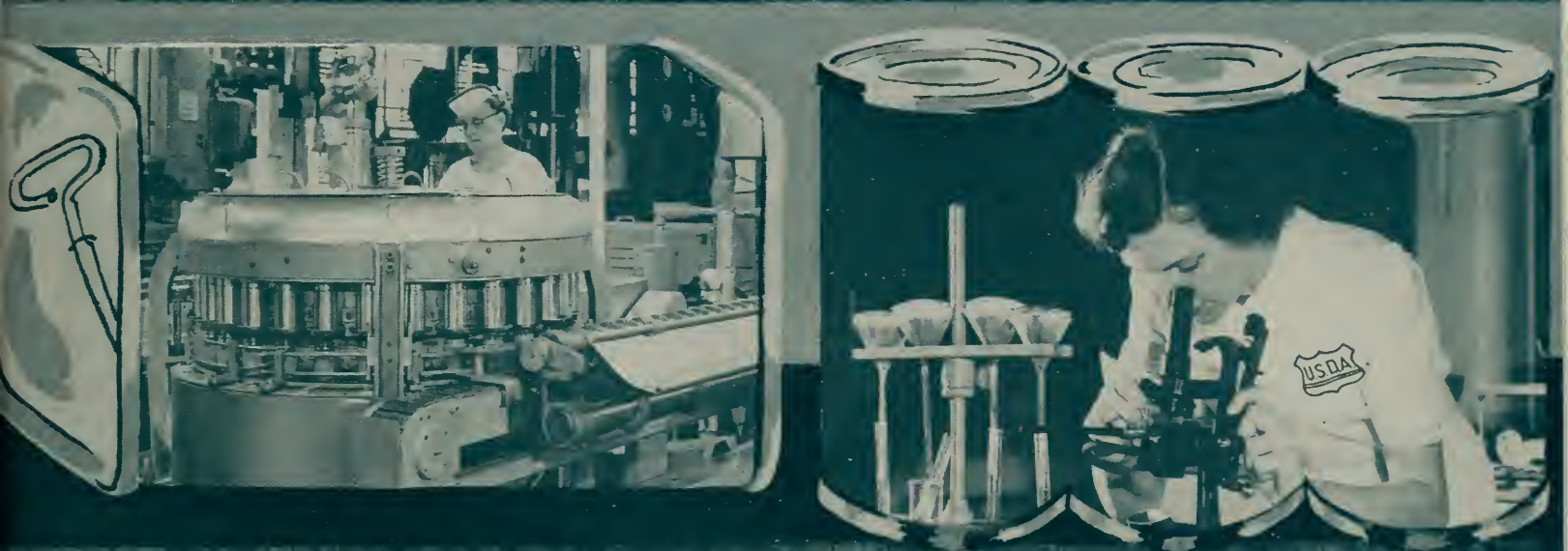
And the many allied groups who are vitally concerned with the canning industry—can manufacturers, for example, and many more—will be backing the celebration with extensive advertising and publicity. In addition, the canners themselves are conducting extensive public relations activities for this event.

This month-long celebration of September as Canned Foods Month has been planned to invite participation by all those interested or concerned. It is a merchandising event that offers opportunity for advantageous tie-ins by persons who are engaged in many phases of the broad field of agricultural marketing.

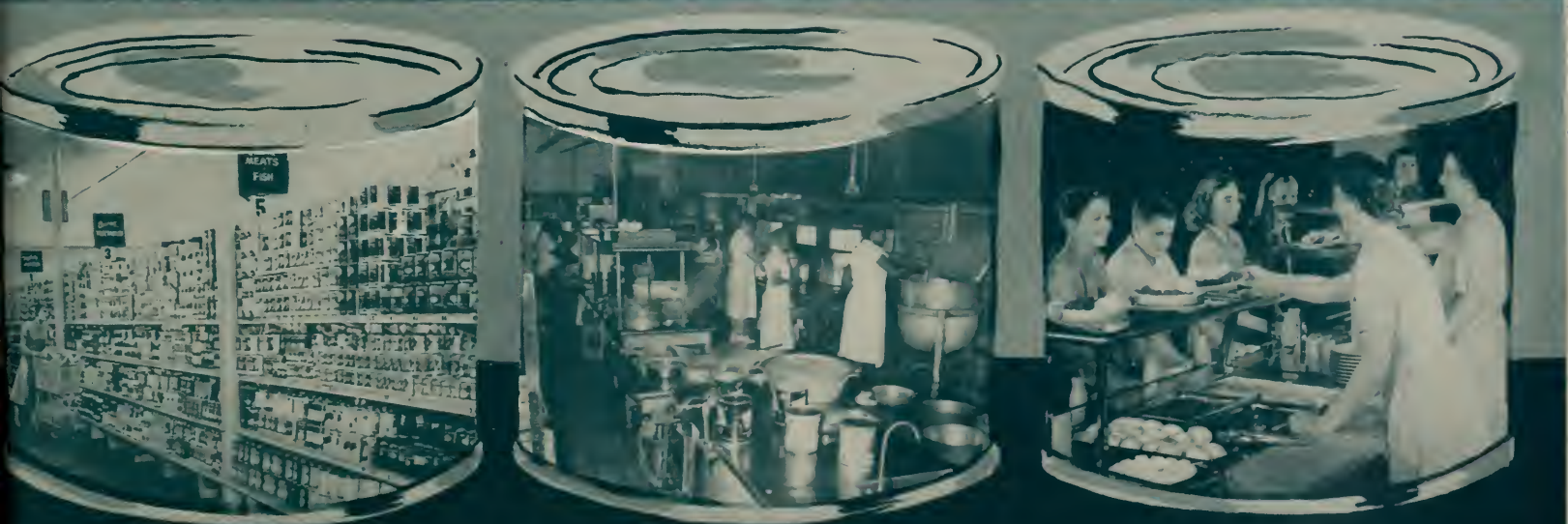
Canned Foods from Field to Table



The canning industry offers broader marketing opportunities for the diverse products of farm, field, and orchard.



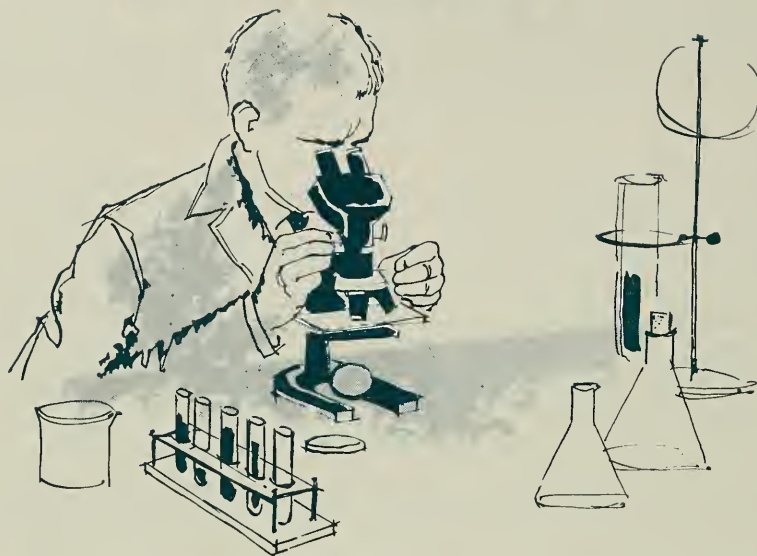
From raw products to processed products, USDA inspection services aid canning industry to produce quality foods.



A wide variety of canned foods is available for good meals at home, in food service establishments, and at school.

The DMC

A TEST FOR NONFAT DRY MILK QUALITY



by JOHN C. BLUM and E. SMALL

IS THE DMC TEST a good method of judging the quality of nonfat dry milk?

Dairy specialists in the Agricultural Marketing Service believe that it is.

The Direct Microscopic Clump Count provides a quick and relatively accurate method of judging quality. It is quite sensitive to variations in the raw milk used, in plant practices, and in manufacturing methods.

Although long recognized as an indication of fluid milk quality, the DMC test has not been widely used for nonfat dry milk. Industry experience with the test has been limited.

To better acquaint the dairy industry with the DMC testing method and to provide answers to a number of questions that have been raised, AMS dairy specialists last year began a series of laboratory analyses.

The first study, in which 25 laboratories participated, showed a considerable variance in test results. This variance, however, was in direct

relation to the experience of the technicians who performed the tests. Those who had had more experience with the DMC testing procedure for nonfat dry milk got much more consistent results than those who were less experienced with the test.

Consequently, a second study was made, using only those laboratories which operated under USDA supervision. All the technicians who performed this series of DMC tests were thoroughly acquainted with the testing procedure. But, to make sure that their techniques would be uniform, these lab workers were given further training.

Next, samples of nonfat dry milk

Improving the quality of dairy products is a good way to increase their sales value. It is also a way for enterprising dairymen to open new markets for their products.

Brace Rowley of the Kansas State Board of Agriculture reported at the National Marketing Service Workshop how one co-op manager raised his quality standards specifically to meet the requirements of a national ice cream company operating out-of-State. Initially, his sales to this firm were small, but they increased as quality improvement advanced. Today, this account provides a half-million-dollar income to his co-op.

At the same time, this quality-conscious dairyman developed another in-State market for his sweet cream and condensed milk solids. In the last 5 years, this has added another half million to the co-op's income.

with four different levels of bacteria were made up and sent to each of the cooperating laboratories. Each technician received 25 different samples from each level and prepared one slide from each sample. Ten fields were counted on each slide.

This time the results showed a much higher degree of reproducibility. Again, this was in direct relation to the amount of special training and experience these technicians had received.

Further evidence that the additional training had paid off was seen in the fact that there was also a big improvement in the consistency of results both within and between each of the laboratories. USDA technicians at the Chicago Dairy Division Laboratory, who possessed the greatest amount of experience, showed a remarkable degree of consistency.

AMS dairy specialists have concluded that even good technicians working with proper equipment must train for several hours a day, under immediate supervision, for at least a month before their results can be considered reliable for running direct microscopic clump counts on nonfat dry milk.

When an adequate training program for technicians can be worked out, DMC testing should reach a satisfactory degree of standardization and reproducibility for industrywide use.

Increased use of the test, the dairy specialists believe, will bring further advances in quality improvement for the dry milk industry.

John C. Blum is Chief of the Standardization and Program Development Branch, Dairy Division, AMS. Mr. Small is Head of the Standards Section of that branch.

MARKETING MELLORINE

In 7 Trade Areas

by LOUIS F. HERRMANN

WHETHER mellorine sales rise or fall depends largely on the attitude of the manufacturer—how he prices, promotes, and distributes the product.

In areas where competition among frozen dessert manufacturers is keen, more mellorine is produced and sold. But where the manufacturer lacks interest, so apparently does the public.

This rather unique marketing situation was revealed in a recent study conducted by the University of Kansas Bureau of Business Research under contract with the Agricultural Marketing Service. Covering 7 widely separated trade areas, the study originally sought to find how mellorine competed with other frozen desserts. However, it pointed up much more sharply the competition among the frozen dessert manufacturers.

First legalized in Texas in 1951, mellorine is now being produced in 11 other States as well. Many frozen dessert manufacturers have added it to their "all dairy" line to improve their competitive position.

Although not strictly a dairy product (it's made from vegetable and animal fats other than milk), mellorine requires the same equipment and manufacturing methods as ice cream.

Large independent firms were the



first to begin manufacturing mellorine. But it wasn't long before national processors also were turning out their own brands. For the most part, these firms did not want to introduce a nondairy product into their "all dairy" line. But, they found it necessary to meet the competition.

Since the usual consumer factors—income, educational background, geographic location, and the like—played only a minor part in determining mellorine sales, the fate of the product depended on the policies and practices of the manufacturers.

In all of the trading areas studied by Agricultural Marketing Service, mellorine prices were more a matter of policy than cost. The relationship of mellorine prices to the prices of other frozen desserts varied widely among the markets, fluctuating to meet the competition, to serve as price leaders, and as weapons in price wars.

Actually, the price spread between mellorine and ice cream should have differed only as much as the costs of the fats in the two products. Other production costs were the same. Seldom, however, was this reflected in the price spread. In one instance, ice cream sold for less than mellorine; in another, it was 60 cents a gallon more.

The distribution of mellorine pretty much followed the pattern of other frozen desserts. Large manufacturers used several devices to insure preferential treatment for their

products in retail outlets.

In States where it was permitted, a large firm often supplied the retailer with holding cabinets in which only his products were to be kept. Or, a manufacturer offered a sliding scale discount which depended on the volume of purchases. One company in Tulsa even allowed for seasonal fluctuations in its quantity discount scale.

Many large processors obtained contracts, through competitive bidding, to be the sole supplier of frozen desserts for supermarket chains in the area.

Promotion, however, played the most vital role in determining mellorine sales. Consumer demand for mellorine seemed to arise primarily from industrial promotion of the product.

In those areas where the independents were actively pushing mellorine, stressing its flavor, its quality and price, sales were high. At one time in St. Louis, the mellorine production of two independents accounted for 50 percent of the frozen dessert market. These sales later dropped to 20 percent when national firms entered the picture and began promoting their brand names rather than mellorine in particular.

If a particular product were to be pushed, the national concerns preferred to promote ice milk. Both ice milk and mellorine sell for about the same price, but the profit margins from the dairy product are greater than those from mellorine.



Louis F. Herrmann is Assistant Chief of the Market Organization and Costs Branch, AMS.

CONVENIENCE FOODS AND THEIR COST TO CONSUMERS

by ROLAND G. HARRIS and PHILIP B. DWOSKIN



FOOD prices have risen fairly steadily since 1940.

So have the production and consumption of convenience food items.

Could there be any tie-in between these two facts?

Agricultural Marketing Service economists, basing their decision on a preliminary price study of convenience food products in Washington, D.C., during December 1957, believe that apparently there has been a very close tie-in between the two.

The pilot study, made by researchers in the Market Development Branch, found the average housewife was paying only about 1 percent more for "serviced" foods. On \$1 worth of groceries, she added only 61 cents to cover the cost of "built-in maid service."

Although there's no doubt but that processing adds slightly to the retail price of many convenience foods, this is often not the case. Some "serviced" foods actually sell for less than non-serviced items of equal quantity and quality.

For the most part, the 27 billion dollar increase in the cost of marketing farm products (since 1940) has been due to the larger volume being marketed and the generally higher costs of marketing operations. More away-from-home eating and other marketing services such as better packaging also account for some of the increase.

Only a small portion of today's marketing costs can be charged

The authors are agricultural economists in the Market Development Branch of the Market Research Division, AMS.

increased sales of convenience foods.

The AMS study pointed up this fact most clearly. In a comparison of 2 serviced and 52 nonserviced food items, it was found that the housewife who bought all serviced foods paid only 1 percent more than her neighbor who bought all nonserviced items.

However, this was true only when the women followed the same purchase pattern as the average consumer in 1956. And, when the price of each convenience food included in the study was weighted by the percentage of the food budget usually spent for these items.

Prices were obtained in supermarkets of three of the largest chain organizations in the Washington, D.C., area. Food trade spokesmen indicate these firms probably account for more than 50 percent of the total dollar volume of grocery store sales in the metropolitan area.

All items included in the price comparison between the serviced and unserviced foods were as nearly comparable as possible. Grades, varieties, and other food characteristics were closely matched. So were quantities.

Quality was the only factor that didn't always match closely. Some fresh foods lacked a processed item of equal quality; other processed foods were superior to the quality of the fresh products displayed in many retail stores.

Some of the convenience foods included in the study were: Packaged frozen ground beef patties, cutup ready-to-fry chicken, frozen precooked sausage, breaded ready-to-fry

shrimp, instant coffee, frozen french fried potatoes, frozen chopped spinach, frozen concentrated orange juice, chilled orange juice, and cake, cookie, biscuit, and piecrust mixes.

Frozen precooked dinners—generally considered the ultimate in convenience food items—were not included in the pilot study. They were omitted because no accurate ingredient or yield data were available at the time.

For the 52 selected items on the AMS list, 28 of the convenience food items cost more than their comparable unserviced products. Eighteen serviced foods were less expensive than equivalent unserviced items, and 6 serviced and unserviced food products were equal in price.

The 28 serviced foods which were more expensive than the corresponding unserviced items cost a total of \$3.32 more—or 12 cents per unit. However, such a per unit average is not realistic. Tea bags accounted for nearly half of the total increase and had they not been included in the study, per unit costs would have been greatly reduced.

For the 18 serviced foods which were less expensive than unserviced foods, the difference amounted to \$2.94. This averaged out to 16 cents per unit for all foods in this group.

The difference, then, between the total cost of the serviced and unserviced foods on the AMS list was only 38 cents more for the convenience food products.

Whether it would cost the housewife 38 cents to prepare the unserviced foods in her own kitchen was

not measured in this study. But there most certainly would be the direct costs of gas or electricity for cooking and the more indirect costs of detergents and scouring materials for cleaning utensils. The housewife's time also must be considered.

Another factor not included in the AMS study was the seasonality of the various products. This is an important consideration in the pricing of many food items. Some of the convenience foods may offer the consumer a cheaper alternative at certain times of the year, but may be more expensive at other times. For example, angel food cake mix, which contains 12 or 13 egg whites, may be cheaper than the separate ingredients during the fall when fresh egg prices are high.

This preliminary investigation of convenience food prices does not by any means provide the final answer to the question concerning the impact of these items on the individual consumer, the farmer, and the marketing system. Further research is necessary.

For a more precise evaluation of the matter, price comparisons must be made in various regions of the country over a longer period of time.

And, of course, there must be a much wider sampling of retail prices and a wider assortment of serviced and nonserviced food products.

To keep pace with the ever-changing food industry, a more comprehensive research program is being planned. Such a study should provide the basic data needed to evaluate the full impact of convenience foods on producers, processors, and consumers.





Polyethylene-coated liners keep year-old rose bushes fresh and healthy during 5-month storage period.

A BETTER STORAGE LIFE FOR CALIFORNIA BARE-ROOT ROSE BUSHES

by DR. JOHN M. HARVEY

AMS RESEARCH has given California rose producers a new method of protecting the quality and increasing storage life of year-old rose bushes.

A lightweight liner of kraft paper coated with polyethylene now does the job formerly performed by sphagnum moss and excelsior—and does it much better.

Growers have been having a lot of trouble preventing decay and desiccation in their stored bare-root rose bushes. The moss-excelsior package did not adequately protect the plants. Even in ideal conditions, it was difficult to maintain proper and uniform moisture in the moss.

The new poly-coated liners provide the plants with much better protection and almost doubles their storage life. As an added benefit, they reduce

the weight of the containers and cut down on shipping costs.

Developed by Dr. M. Uota and the author at the Fresno, Calif., AMS Laboratory, the liners can be used in fiberboard, wirebound veneer, or nailed wooden containers.

Repeated tests, made in cooperation with the University of California farm advisor Robert W. Lateer, showed that a poly-coated liner inserted in a fiberboard carton met four of the five basic requirements of an "ideal" package for storing bare-root California rose bushes.

- **It was moisture retentive.** Bushes could be held in storage for 5 months or longer without appreciable moisture loss. Storage life in the moss-pack containers is limited to about 3 months.

- **It withstood physical breakdown during long storage periods.** None of the fiberboard cartons failed

to pass rigid stacking tests during long storage periods. Although the atmosphere within the liners was almost saturated with water vapor, the polyethylene coating prevented moisture from weakening the carton.

- **It was relatively inexpensive.** The carton and liner cost only \$1.56 each, compared to \$2.37 for the sphagnum moss package. The fiberboard carton also affords a considerable savings in labor and shipping costs. Preparing the box for storage takes less time, and the gross weight of the package is reduced 20 percent.

- **It allowed the bushes to cool as quickly as those in the moss pack.**

What the poly-coated liners did NOT do was help the decay problem. The high moisture content of the air inside the liners actually favored decay.

This made it necessary for the researchers to find a fungicide which could hold this decay in check. Captan, one of the more common mold deterrents, proved extremely effective. In a series of tests extending over a 4-year period, this fungicide consistently controlled the decay-causing grey mold.

Captan was applied immediately after trimming the bushes in the packing house and just before packing them. The entire plants were dipped in a suspension which contained 2 pounds of captan 50 WP and 100 gallons of water.

In a test made under commercial conditions in 1957, less than 0.5 percent of the bushes treated with captan needed reconditioning after storage, while about 13 percent of untreated bushes had to be trimmed of decay wood. The use of captan, relieves growers of much of the cost of conditioning rose bushes before planting.

All things considered, the new poly-coated liners in either fiberboard or wooden containers come much closer to the "ideal" package than the old wax paper liner with sphagnum moss and excelsior.

The author is senior plant pathologist in charge of the Quality Maintenance and Improvement Field Laboratory, AMS, Fresno, Calif.

HUMIDIFIERS FOR POTATO STORAGES

by A. H. BENNETT and L. L. BOYD



Centrifugal humidifiers help reduce shrinkage by adding moisture to ventilating air. The closeup above shows fineness of moisture discharge; below, humidifier at work in experimental storage.

LONG ISLAND potato growers have found that if their potatoes shrink in storage, their returns shrink with them.

What they haven't found out, however, is the best way to prevent this shrinkage.

AMS research engineers are trying to help them with this problem. They are experimenting with ways of increasing the relative humidity of the

A. H. Bennett is an agricultural engineer in the Marketing Research Division of AMS. L. L. Boyd is an associate professor of agricultural engineering at Cornell University, Ithaca, N.Y.

AMS researchers found humidity to be one of key factors affecting firmness of stored potatoes.



entering air in ventilated potato storages.

Humidity is one of the key factors affecting the firmness of stored potatoes. If it can be regulated so that just the right amount of water vapor moves with the ventilating air in and around the potatoes, shrinkage can be held down.

Humidifying may be accomplished in several ways. Air can be blown across a wet surface, thus moving moisture-filled air into the storage room. Air at high velocity may be mixed with water particles that are finely dispersed by centrifugal force. Or, a pneumatic spraying system installed.

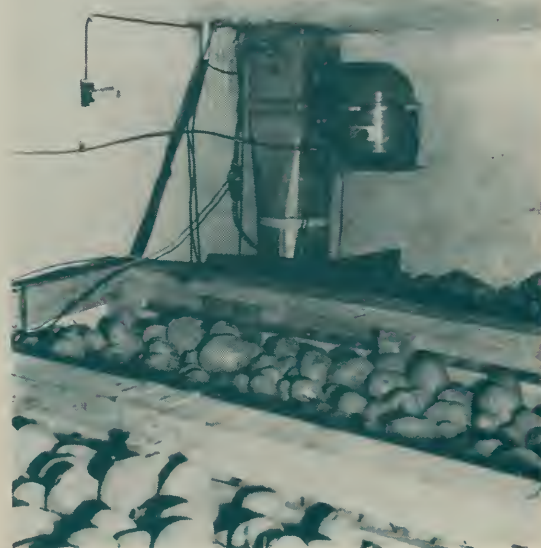
Each of these three methods worked well in AMS tests conducted both in commercial storages and research facilities.

Studies at the Long Island Vegetable Research Farm of Cornell University have amplified these findings. Experiments here proved conclusively that the introduction of water vapor in the intake ventilating air of potato storages increases firmness and decreases shrinkage.

These tests also pointed up several other rather pertinent facts:

- The rate of air flow should not exceed 0.8 cubic feet per minute per hundredweight. At higher rates, shrinkage will increase—unless, of course, more water is also added.

- Small differences in hardness between similar lots of potatoes point



out significant differences in weight loss by evaporation of water from the tissues.

- On Long Island, the optimum rate for adding water is approximately 1 pound for each 10,000 cubic feet of air.

- Moisture vaporized directly into the storage space rather than through the ventilation system is not effective in reducing shrinkage caused by loss of water in transpiration.

The bill for marketing food products rose 4 percent from 1956 to 1957.

PREPARING FOOD FOR SCHOOL LUNCHES

Before most of New York City's half a million elementary school children have even had their breakfasts, their lunches are being prepared at the huge central kitchen located across the East River in Long Island City. Maintained by the Board of Education, the Central High School Lunch Kitchen serves 720 elementary schools taking part in the National School Lunch Program in the five boroughs of New York City.



Huge 100-gallon kettles are used to prepare 6,000 gallons of soup daily. In the foreground, 5-gallon pots stand ready to carry soup to specified schools.



Sandwich makers at New York City Central High School Lunch Kitchen average 330 sandwiches an hour. Capable hands quickly turn 4 pounds of jam, 9 ounces of butter, and 4 loaves of bread into 85 to 88 sandwiches.



Some 135,000 to 140,000 sandwiches are made daily for noontime serving. Completed sandwiches are packed into carriers holding 50 sandwiches. These go to city elementary schools along with variety of other food items.



New York City Board of Education maintains fleet of trucks for distributing prepared foods to schools. In all, 43 routes are used; longest is 35 miles.



Dorothy V. Zeman, supervisor of the New York City Bureau of School Lunches, points to location of 43 truck routes where foods are distributed.

FOOD USES OF *Fats and Oils*



by **GEORGE W. KROMER**

AGRIBUSINESSMEN who are concerned with prospects for food fats and oils in a diet-conscious U. S. market can roll up their sleeves and get on with their jobs: Food fats and oils are just as popular today as they were 20 years ago.

That's what AMS economists found when they added up the amount of fats and oils used for food in the U. S. during the past 20 years and made adjustments for population changes.

Economists estimate that, on a per person basis, civilians used about 45 pounds of food fats and oils in 1957, the same amount as in 1935-39.

Yet, despite this apparent stability in consumption, there has been a gradual shift in the end products consumed and in the amounts of primary fats and oils used.

Today's diets include more margarine, cooking and salad oils, mayonnaise, salad dressings and related products; about the same amount of shortening, and less butter and lard.

Thus, the consumer is getting much more soybean oil in his food fats; a little more edible beef fats and corn, olive and peanut oils; but less butter, lard, and cottonseed oil.

The greatly increased use of soybean oil has been the most important

single change in consumption patterns. This has occurred mainly since 1942.

Food uses of soybean oil increased more than tenfold from the 1935-39 average of 0.2 billion pounds to 2.3 billion pounds in 1957. Soybean oil now accounts for about a third of the total food fats and oils consumed.

Margarine manufacturers are the largest buyers of soybean oil for food purposes. They used about 874 million pounds during 1957, or 75 percent of all fats and oils used in the manufacture of their product. Before World War II, this outlet took only 61 million pounds.

Shortening manufacturers also provide a substantial market for soybean oil. Last year, soybean oil comprised nearly 44 percent of the total quantity of fats and oils used in shortening. Twenty years earlier, it accounted for 12 percent.

Although 1957 was not a peak year for sales of soybean oil to shortening manufacturers, producers still did a good business in that market. About 796 million pounds of soybean oil went into the manufacture of shortening.

Although the direct use of lard, on a per capita basis, was slightly less last year than 20 years earlier, the 2 billion pounds consumed in 1957 accounted for about 25 percent of the total food fats and oils used.

The increased use of lard in the

manufacture of shortening has helped to offset the decline in direct use as such. Shortening manufacturers consumed 459 million pounds in 1956 and 376 million last year. This represented nearly 25 percent of all fats and oils used in this commodity. Two decades ago, virtually no lard was used in shortening.

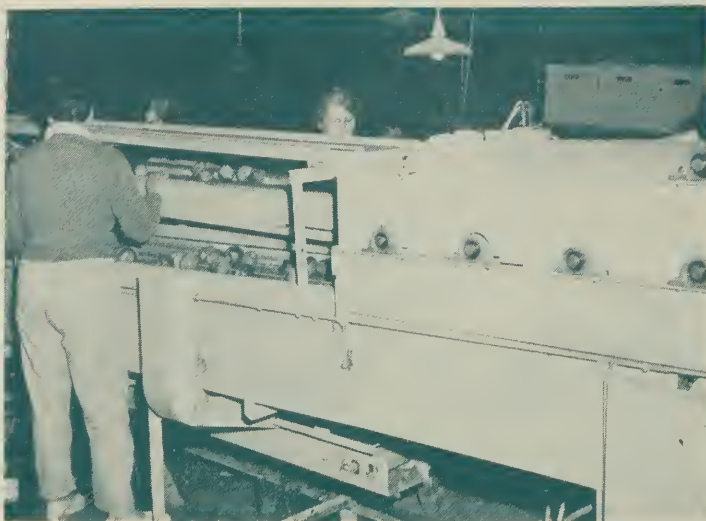
Among primary products, butter has made the most significant decline. In 1935-39, yearly consumption ran about 1.8 billion pounds (fat content) or 30 percent of total edible fats and oils consumption. Last year, it was only 1.2 billion pounds or 15 percent of the edible total. The downward trend in butter consumption, however, leveled off in 1954. Since then, yearly totals have remained steady.

Overall food use of cottonseed oil also has run somewhat less than pre-war. An annual average of 1.4 billion pounds was consumed in 1935-39—24 percent of the total food fats and oils. In 1957, consumption was 1.2 billion pounds, only 14 percent of the total.

A bright spot in the cottonseed oil story has been the upward trend in the use of that product in cooking and salad oils and a large number of related products. Cottonseed oil is the major fat used in these foods.

On the whole, the demand for food fats and oils in 1958 should remain near the 45-pound-per-person level of recent years.

The author is editor of the *Fats and Oils Situation*, an AMS publication.



Mechanical sorting table is a key part of the AMS-designed packing line now being tested with McIntosh apples in a commercial East coast plant.



Tray and cell packers examine each apple as it goes into the carton. If this quality check were eliminated, output of each worker would double.

MECHANIZED PACKING OF McINTOSH APPLES

by STANLEY W. BURT

MECHANIZATION has finally caught up with the delicate McIntosh apple.

Agricultural Marketing Service researchers have developed a mechanical packing line that handles the McIntosh just as gently as hand labor. The apples move mechanically from storage to packing case with little or no bruising. They make the trip quickly and easily—with less labor and at less cost to the packer.

Although still in the experimental stage, the AMS-designed line promises to greatly improve the operation of East coast apple packinghouses. It will eliminate much of the costly hand labor previously required for Macks and make way for new packing methods and new types of equipment.

The experimental line has six principal parts: An automatic dumper, an adjustable sorting table, a dimension sizer, automatic box filler, return flow belt for accumulated fruit, and a mechanical tray packer.

Tests have already proven the automatic box filler to be a real labor saver for making up a jumble pack.

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Although still manually topped, this type of packout can be performed by machine with only about 6 percent bruising.

If a hand sorter is employed to remove the culls, the packout would then meet the same rigid quality standards as a jumble pack that has been entirely hand packed. The work previously performed by 7 workers now is done mechanically with the aid of 2—one to top the pack and one to sort out the culls.

To assure bruise-free fruit, however, only firm apples should be packed mechanically. Fruit with a resistance of 12 pounds (as measured by pressure test) moved down the experimental line and into packing cases with less than 5 percent bruising. Fruit of only 9 pounds' resistance suffered 4 times this amount of damage.

Evidently, somewhere along the firmness scale—probably around 10 pounds—apples begin to deteriorate with handling. Unless the fruit is above this level of firmness, bruising can be expected regardless of the packing method employed.

Another phase of the AMS testing showed that it isn't necessary for tray and cell packers to examine each apple as it goes into the carton. With-

out a quality check but with 2 more workers at the sorting table, only 1 additional off-grade apple is packed in every 2 cartons. This is more than offset by the increased output of the packer, who now can fill 2½ cartons in the time it previously took to pack 1.

But even this more efficient packer soon may be replaced by a machine. An automatic tray packer, already in use for most other varieties, is being adapted for McIntosh apples.

Also, the possibility of sorting and sizing McIntoshes is being investigated by AMS research engineers. This practice would remove off-grade and off-size apples before they are placed into storage. In this way, only top quality fruit would be stored, and the packer could make the best possible use of his storage rooms.

Sizing of the good fruit would also provide the packer with detailed information on the volume of each size group he has in storage.

As McIntosh apples go into the packing sheds this fall, tests will again be run on each part of the mechanical packing line. Complete data on labor and equipment costs, as well as on bruising, will be tabulated, and the results of the two-year study will be made available.

NEW LOADING METHOD CUTS SHIPPING COSTS FOR PEACHES

by PHILIP L. BREAKIRON

RESearch conducted by AMS transportation specialists several seasons ago paid off this year in big savings to peach growers, shippers, receivers, and transportation agencies.

Together, these marketing men cut peach transportation costs over \$400,000.

The research that made these savings possible is a new method of loading baskets of southeastern peaches in railroad cars, combined with hydro-cooling of the peaches before loading. By placing every other basket upside down (alternately inverted) and crosswise offsetting the baskets in the car, more baskets can be fitted in and the load safely stacked another layer high. Because the alternately inverted method allows a bigger, more compact load, the peaches move to market at less cost and with less damage.

Early this year, railroads published reduced freight rates on peaches shipped from the Southeast. To be eligible, however, the load had to meet several specifications. The fruit—if packed in baskets—must be loaded by the alternately inverted, crosswise offset method with an extra layer of containers. The fruit must be hydrocooled before shipment.

If the grower-shipper met these requirements, his savings could be substantial. On a shipment of peaches from Fort Valley, Ga., to New York City, he could save as much as \$204 a carload on freight and refrigeration costs.

The author is a staff member of the Marketing Research Division of AMS.

Needless to say, it didn't take the Georgia and South Carolina peach industry long to take advantage of this deal. Several hundred cars of peaches were shipped during the 1958 season in alternately inverted baskets stacked an extra row high.

But the peach industry wasn't the only one to profit by the more efficient packing method. The railroad companies, too, came in for a share—even though the heavier, alternately inverted loads moved at lower rates than the lighter upright loads.

Actually, this is not the paradox it seems. There are several very good reasons why the railroads also figure to make money. With the new heavier load, rail carriers can haul in 3 cars the same quantity of fruit they formerly carried in 4. There is less empty mileage, tare weight, switching, billing, and various other costs per ton of fruit transported.

The lower transportation rates for the heavier alternately inverted load

have enabled the railroads to increase their share of the southeastern peach traffic. This, in turn, has increased their gross revenue.

At the same time, railroads have reduced the number and size of damage claims on the shipments. The more compact alternately inverted loading method brings baskets of peaches through in much better condition than the conventional upright method. Claims for loss and damage are substantially reduced.

Compactness is perhaps the most important feature of the alternately inverted loading method. This more solidly packed load bears up well under the normal hazards of rail transportation. It allows more efficient use of the available loading space in the car and makes possible the addition of an extra layer of baskets without any extensive increase in transit damage.

This improved loading method is also being put to use by the trucking industry. This year, several truckers in the Southeast began using the alternately inverted method.

Agricultural Marketing Service, at the request of peach shippers and truckers in the area, have made a number of test shipments by truck. Although this research is not yet complete, preliminary results show that the alternately inverted loading method works just as satisfactorily in trucks as in railroad cars.

Alternately inverting baskets of peaches allows bigger, more compact loads; peaches move to market at less cost and with less damage. This year's savings on southeastern crop estimated at \$400,000.



October Cheese Festival

THE dairy industry is planning to make October one of the most colorful marketing months of the year.

Cheese, with its many gay and varied colors and broad gamut of flavors, will be featured as the food of the month.

Again this year, a giant merchandising campaign is being scheduled to celebrate the October Cheese Festival. Promotional pieces for restaurants and retail stores, advertisements in newspapers and magazines, and radio and television publicity will all focus attention on "the world's best cheese . . . from the good old U. S. A."

Behind this annual event are the Nation's dairymen and their industry. The U. S. Department of Agriculture is also supporting the October Cheese Festival. A Special Plentiful Foods Program is being geared to move

more of this year's abundant cheese supply to the consumer.

Food tradesmen of the Agricultural Marketing Service are already at work contacting the distributors of food and enlisting their cooperation in the drive.

A highlight of the industry's promotional campaign will be a program of full-color, full-page newspaper advertisements. A supporting program of broadcast advertising will run on network television and on radio. A full line of publicity materials also will be available for the use of food writers and broadcasters.

In addition, the industry has prepared an array of hard-hitting merchandising materials on the Cheese Festival theme. They include over-wire hangers, dairy price rail strips, dairy case pennant hangers, rack display cards, shelf talkers, restaurant display pieces, and a special poster

showing the long, bright line of various cheeses.

Prospects are for widespread participation in the campaign by all branches of the food industry. Last spring at the Cheese Rally which launched this campaign, representatives of food retailers enthusiastically reported on how they've cashed in on the October Cheese Festival to build a significant boost in the sales of cheese—sales in October and repeat sales later on.

The enthusiasm of their reports has been heightened by the promising campaign that's been developed and the effective materials available for use in it. As a result, the food trades are getting behind the October Cheese Festival, using their own materials as well as the industry's and pushing cheese not only by itself but along with its many related items.

Marketing Margins for White Bread

THE grocery-store price of bread rose almost a third between 1948 and 1957, yet the farmer's share of this retail price went down rather than up.

The value of all farm-produced ingredients used in baking a 1-pound loaf of white bread dropped from 3.4 cents to 3.2 cents.

Between the farmer and the consumer, however, lie four marketing groups: The transportation, handling,

and storage agencies and the processing agencies which produce the ingredients other than flour; the millers; the baker-wholesalers; and the retailers.

Of the 18.8 cents spent in 1957 for a 1-pound loaf of white bread, the baker-wholesaler received 10.5 cents—or, 56 percent of the retail price. This was 4.2 cents more than he got in 1948 and accounted for 86 percent of the 10-year increase in prices.

At the same time, the retailers received only 0.7 cent more; the handlers and processors, 0.2 cent; and the millers' share remained unchanged.

Wages and salaries, which are the largest item of expense, accounted for the major part of the growth in the baker-wholesaler margin. Labor and related expenses per loaf have just about tripled since 1945; however, other cost items have increased almost proportionately.